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Editorial.

MEAT AND MILK.

THE prices of meat and milk are up. They have increased so much as actually to arouse the resentment of the consumer. The usual tinpot arguments dealing with the remedying of the inconvenience are being advanced. The butcher and farmer are being slated for their supposed direct part in the fleecing of the public. The shortsighted arguing fraternity are putting forward methods for checking the rise which, if expedient, do not deal with root causes; they scatter the froth but do not produce any impression on the body of the devouring wave. It is as hard to make the British public believe that a quart of milk is equal in food value to eight eggs or three pounds of cod-fish and far less in price, as to make them understand the real reasons for abnormal rises in price of commodities. Some advise meatless days, and others boycotting the milk suppliers. Few tackle the subject of increasing the number of bullocks, sheep, pigs and poultry, or the stimulating of calf-rearing and the production of cows worth keeping.

Scarcity of supply and artificial manipulation are the two ground factors that keep prices up. There is no evidence that there is any artificial manipulation, and agriculture is not run as a pastime to supply food at less than cost value. We have been content in palmy days of peace to scratch along with the milk supply, never going beyond the bare necessity of the demand. There has been quite insufficient propaganda work to put its value as a food and beverage before the man and woman in the street and quite a lack of organising ability in dealing with the demand and supply.

XUM

A man in discussing the expected great preponderance of women after the War said to me: "Well, matters will settle themselves, I think. Quarter of the women aren't fit to get married; quarter of them, although wishing to get married, will not be able; quarter of them will not want to get married; and the other quarter will metaphorically 'strike oil.'" So that really, according to this prophet, it will only be a matter of meeting the demands of 25 per cent. of the women. If the women play their cards right, and the men are discerning, there is therefore a chance of the 25 per cent. being fit and capable mothers, physically and mentally. Talking with a married lady recently who was running down the farmers' supposed avariciousness as regards the price of milk, I said, "Well, my Mother had thirteen children, and she never worried at all about the price of milk until each of us was a year old." It was a long time before she grasped my meaning and comprehended how the personal factor had a bearing on the price of milk; but the possession of the special attribute does not increase nowadays among the women. It is a case of atrophy following lack of use.

As we have suffered for our unpreparedness in martial matters, so must we suffer for our unpreparedness in food matters.

Over 12 per cent. of our population were employed in agriculture before the War. What percentage of effort was expended on its benefit or progress by the State?

It is foolish to look upon the farmer, dairyman, and butcher at present as more or less licensed pickpockets. The fault lies with our faculty of neglecting important things, which in the past has always been a more evident one, than our will and capacity to deal with them. It isn't a question of inability to find the money, the brains or the driving power. All these things can be found. It is just a policy of *laissez faire* and the fact that men with few exceptions make self-interest and the pursuit of wealth dominate their minds, and all things that really matter—national, social, and economic—are neglected in the piping times of Peace.

Whether, notwithstanding the great amount of rubbing of the eyes and yawning and attempts to wake up that are being exhibited now, things will be really different in the days to come is a matter that depends on national clarity of vision and the ability and will to see and do important things.

We have touched on these matters because the price of meat and milk and the factors controlling them ought to be at least as interesting to the veterinary surgeon as the price of petrol. We want to see a clear policy in these matters outlined and "something attempted, something done." We are afraid, however, that at present the right people to enable the advance to be achieved are not being consulted. As a sidelight on the matter the following extract from a recently published letter may be quoted:—

"I am a member of a County Committee and Chairman of a District Committee, but have to confess that our year's work is of a negative character, such as the extermination of docks, thistles, nettles and noxious weeds from roadsides and farms, the thinning out of rookeries and the destruction of wood-pigeons; about 800 acres of uncultivated land has been reported, and about 200 acres under-cultivated. No power over either of the latter classes being in existence, our reward is at present that the facts are in the pigeon-holes of the Board of Agriculture." G.M.

SURGERY.

THE usual hackneyed phrase put into the mouths of the prodigal son or daughter on their return home is: "How the old place has changed!" If past masters in the art of surgery were to return to-day, they would marvel greatly at the changed conditions of procedure and work in surgical fields. In the middle ages a surgeon had to be a plucky man capable of defending himself against insult and oppression, whilst his standing was about equal to that of a butcher or artisan.

Imprisonment or death was his reward if a wealthy patient died after being operated on by him. A French surgeon who failed to restore the sight of the King of Bohemia was sewn up in a sack and thrown into the Oder, whilst a celebrated operator in the sixteenth century, more astute than some of his fellows, obtained a safe conduct from the bishop, the patient, his master and friends before he commenced a critical surgical feat.

Fees were more difficult to obtain than at present, and medical volumes devoted much attention to the important question of how to treat patients so that they would be likely to pay the bill. Two ways of acting are indicated; in the one it was sought to cure the patient as soon as possible, and in the other to prolong the duration of the malady. The five classes to receive special consideration as regards quickness of cure are the poor, one's friends, the grateful, the notoriously bad payers (*e.g.*, judges, lawyers, and officials in high positions), and, lastly, those who

pay cash down. Mandeville gives thirteen propositions explaining the art of lengthening out the malady in the case of the rascally rich.

Since the days we have indicated, we have changed; surgeons occupy a far better position, receive more respect, more regard, and are better paid. The art itself has advanced almost beyond recognition, and the whole knowledge of the necessary hygienic conditions to ensure good results in operations has improved vastly.

Perhaps as a class we possess a greater percentage of operators in our ranks than any other. Perhaps, too, we are the most heavily handicapped in regard to hygienic conditions after operating. It behoves us to do all we can to ensure the well-being of patients subjected to the knife. The reasonable use of anæsthetics (local and general), the boiling of instruments, the attempted sterilisation of the field of operation, are things that no up-to-date veterinary surgeon will omit. Even tooth forceps should be sterilised before use.

We think that there has been much advance in the methods of the practice of veterinary surgery in recent years, but the pretty little ways of clients remain to some extent the same as in Mandeville's day. G. M.

We think that the anomaly is that a British graduate can practice in Australia, New Zealand, India or Canada without sitting before a board of examiners in those countries, but if he goes to America he cannot. Politically and constitutionally, of course, this is perhaps desirable, but it isn't evidence of what Mr. Mayo calls a "square deal," any more than it is evident that an M.R.C.V.S. belongs to "a holier than thou" class, because he has to sit before an American board before he is given a licence to practise in America. If there is a "holier than thou" feeling (and we don't admit the impeachment), then it appears to be on the American side and not on ours.

The question as to what is educationally the best procedure in any country is one that can be argued until the "crack of doom," but history, both made and being made, is full of examples to show that "each country" does not "naturally develop its education more in certain lines that experience has proven most useful to it."—G.M.

Original Communication.

NOTES ON INDIAN HEMP, CANNABIS INDICA, AND HENBANE (HYOSCYAMUS) IN CANINE AND OTHER PRACTICE.

By FRED. C. MAHON, M.R.C.V.S.

INDIAN HEMP: A Narcotic, Anodyne, Antispasmodic.

Henbane (Hyoscyamus) Hyoscine: A powerful cerebral and spinal sedative, with its action on the heart expressed to a moderate degree, and used in combination with Morphine as a valuable auxiliary.

I have employed it in cases of colic, and found it act surprisingly well, after Chlorodyne, Physostigmine, Arecoline Bromide, and other drugs failed to afford relief.

Recently I have used both Indian Hemp and Hyoscine somewhat largely, and hope to do so in the future extensively.

In brain affections when Indian Hemp failed to afford sleep, so badly needed, I accidentally, so to speak, thought of Hyoscine, which fortunately I had at command.

Whether the previous use of Indian Hemp interfered with the action of the Hyoscine cannot be definitely proven, but it was some 18 hours, after 3 doses of the same had been administered (at intervals of 2 hours, in the strength of 1-200th grain), that sleep was induced, and my patient, a bull-dog, had some relief, and after some weeks, save occasional moanings and general uneasiness he was progressing fairly well.

The history of the case where Hyoscine has done marvels is briefly as follows:—

Some four months ago, my patient was treated for distemper by a neighbouring practitioner, the sequelæ of the attack resolving itself into brain mischief, and undoubtedly Meningitis. Frenzy, irritability, marked restlessness, moaning, howling being the chief symptoms I first encountered. Morphia and Atropine had been largely used by the dog's former veterinary surgeon, and in large doses without effect. Prognosis was unfavourable, and destruction advised. I was then asked to do what I could, and to a particularly bad case.

One noticeable feature of my patient was that he could progress in a forward direction, and in a straight line fairly evenly, but on turning round he faltered, and the hind-legs crossed somewhat. This was particularly noticeable if the dog turned to the right, slightly so if to the left.

His appetite capricious. Oatmeal biscuits with cream seemed to be the only food he liked. Bovril, milk, raw meat, cooked

meat with which tempted by his mistress, he refused. The dog after some 5 weeks is not wasting by any means. Bowels, kidneys, both perform their functions on the whole regularly and well. I analysed the urine, but found nothing out of the way. Sleep is fairly good. Only 2 bad nights in 5 weeks. When moaning and howling are too frequently expressed, 1-200th grain of Hyoscine seems to be the only remedy to afford sleep and general quietude. Occasionally the cardiac pulsation is tumultuous, so I prescribe Strychnia, Sparteine Sulphate, and Digitalin (Parke, Davis and Co.'s) Tabloids, which seem to act well and steady the heart considerably.

Before further consideration of the action of drugs in cerebral and meningeal affections, may I allude to the two diseases and tabulate what according to the great surgeon (Aitken) distinguishes the two affections.

1. *Cerebral Disease.*	2. *Meningeal Disease.*
a. From the outset, or from a very early stage of development, there is loss of some one or more of the proper nervous functions, such as paralysis, anæsthesia, loss of memory (man).	*a*. It is not till some time after the detection of signs of disease that diminution or loss of nervous function takes place.
b. Cerebral disease is not commonly attended by a high temperature. Exaggeration of function marked, however, such as delirium, convulsions, intense hyperæmia, or tenderness.	*b*. The subsequent diminution or loss of nervous function, which succeeds the prolonged existence of "Head Symptoms," is generally preceded in cases of meningeal disease by extremely severe excitement or exaggeration of functions, such as pain, tenderness, furious delirium or convulsions
c. Little vascular excitement, attends cerebral disease, nor is there frequently any highly marked general disturbance.	*c*. In meningeal affections there is usually much local vascular excitement, with general disturbance.
d. Paralysis and Anæsthesia —Loss of volition, idealism, perception, and the like, characterise cerebral disease.	*d*. Spasms or convulsions, pain, delirium are the general features of meningeal disease.

I may add that during the first few days of my attendance the peculiar moan or whine was so pronounced, and of such a

character, that I was dubious as to whether I had a case of rabies to contend with, so kept very careful and close observation on my patient, also warning owner as to care in dealing with him. But the symptoms closely approaching this terrible disease passed away, and my fears too.

In employing Henbane one must be prepared for many symptoms, such as dryness of the mouth and throat particularly. I ease these with glycerine and syrup in equal parts, smearing tongue and gums thrice daily; also mix a little in the food.

The above-mentioned symptoms presented by Henbane at its onset disappear to a very great extent after a few doses have been administered. If used hypodermically, apparently less dryness of mouth and throat occur—from my observations at least.

Compared with Opium, Hyoscine acts less on the brain and more on the heart and general circulatory system. It does not, however, diminish the secretion of the bowels or kidneys, it dilates the pupil, and as compared with Opium is less effective as an anodyne or antispasmodic. The chief uses to which hyoscine seems most applicable are in brain affections, and allied inflammatory conditions following the result of the poison of, distemper or influenza in dogs and cats, and its employment in these cases I strongly recommended:—

1. Hyoscyamine conveniently used as a sulphate, like Atropine and Daturnine, stimulates, shortly exhausts, and paralyses the sympathetic system.

2. After a brief stage of preliminary excitement, it lowers the force and frequency of the circulation; large doses cause paralysis of the capillary vessels and respiratory arrest, dilates the pupil, and parches the tongue and mouth.

Small doses accelerate the movements of the intestines, and I have used it alternately, with hypodermic injections of Strychnia, in the dog, with excellent results.

In one case I used it where I had Faecalstasis in an aged retriever. No fæces were passed for 11 days, and recovery ensued. During this period 20 grs. of Hyoscine, and nearly two of Strychnia were employed.

Am about to try equal parts of Paraffinum Liquidum, Glycerine, and 1-200th grain of Hyoscine on my next case, should it be encountered.

XUM

In diseases of the cerebrum I pin my faith to Indian Hemp as a narcotic; in meningeal affections Hyoscine, being guided by the subtle differences quoted from Aitken.

In canine practice where facilities exist for studying cases closely, I should like Professor Wooldridge to experiment with these two drugs in the two affections mentioned above, and record his experiences with the same.

Further, Hyoscine resembles Belladonna and Stramonium by first stimulating and subsequently exhausting and paralysing the sympathetic nervous system.

In tubercular meningitis proved by post-mortem examination in the case of a Jersey cow recently, after administration of 8 ozs. of Tinct. opii I had no amelioration of the Meningeal Frenzy, sudden in its onset and marked at first by symptoms of "Milk Fever."

Never have I witnessed such a state of excitement in the so-called Placid Ruminant.

The initial struggles lasted two hours (Cowman's statement). Profuse perspiration, bellowing, throwing head on floor of large roomy barn, with such force as to be heard some distance away. Injected conjunctival membranes. Temp., 104.3 deg. F. Pulse, 90 per minute. I administered secondly ½ grain hypodermically of Hyoscine, per oram 8 drs. of fluid extract. Case being hopeless, I had the cow destroyed. Tuberculosis markedly shown. *Cerebrum* fairly healthy. Meninges inflamed with considerable tubercular deposits. . . .

Referring to Finlay Dun, Hyoscyamus is occasionally prescribed to quieten tumultuous action of the heart, occurring especially in valvular disease. In such cases it will sometimes reduce the pulse of the horse from 60 to 40 beats a minute. Relaxing muscular fibre, and antagonising capillary congestion, it relieves the pain of rheumatism and lumbago, also neuralgia. Given internally as well as by injection, it abates irritability and spasm of the uterus, bladder and intestines.

As a calmative, antispasmodic and substitute for Opium, Mr. Mayhew prescribed it for dogs suffering from distemper, giving half a drachm of Ether, with half a drachm of Tinct. Hyoscyami in cold soup. Combined with drastic purgatives, it prevents griping, without diminishing purgation. French veterinarians use it in epilepsy, chorea, and amaurosis (Delafond and Lassaigne).

Narcotics.—Headland defines a narcotic (Opium, Indian Hemp, Belladonna) as an agent which passes from the blood to the nerves and nervous centres, and acts so as at first to exalt

nervous force, and then to depress it, and has also a special action on the intellectual part of the brain.

Some narcotics, such as Belladonna, Hyoscyamus and Indian Hemp, cause considerable preliminary excitement, and in large doses delirium, and form the connecting links, as it were, between narcotics and such stimulants as Alcohol and Ether.

The property of narcotising the cord, as well as the brain, of the lower animals brings these agents into near relationship with such depresso-motors as Hemlock, Calabar Bean and Chloral.

Henbane resembles Belladonna, but paralyses more notably the cerebrum and motor centres, and stimulates less powerfully the sympathetic, dilates the pupil, diminishes mucous secretion, and relaxes muscular fibre.

Indian Hemp induces hallucinations and delirium rather than stupor, increases rather than diminishes secretion, and is chiefly used as an antispasmodic, notably in tetanus. Narcotics are given to relieve inordinate nervous action, thus they abate the spasms of colic chorea, and tetanus. They diminish the irritability and excessive discharges of chronic cough, bronchitis, diarrhœa and dysentery, alleviate gastrodynia and chronic vomiting in dogs, and blunt the pain of wounds, rheumatism, pleurisy, and other inflammations. To ensure, however, their full effects, they should be give at intervals of one or two hours. Most narcotics contain active concentrated principles which can be conveniently and effectively used hypodermically.

Indian Hemp I usually use as an electuary. Hyoscine I prefer to employ hypodermically.

In colic I have used Chloral Hydrate 40 grs., followed by 3 grains of Morphine, repeating same in an hour, especially in brewery and coal horses. I once used the small dose of 10 grains of Chloral to 1 grain of Morphia, and had what I consider bad results. The pony (a Shetland), however, did well. The aggravated symptoms of intestinal pain increased directly I used the same, and I attributed this to some constitutional repellance or idiosyncrasy of the patient to these drugs.

No hard and fast line can be drawn when using drugs. Constitution, I aver, of an individual or animal plays a great part in resulting death or recovery, especially with narcotics. This I have often proven in a long course of years now as a veterinarian.

To say one agent is a specific for a disease is not true—a combination of drugs seem to prove the best so far as my experience goes—and is that doubtless of many observant practitioners.

Works alluded to:—

Finlay Dun's Veterinary Medicines.

Williams' Medicines (Veterinary).

XUM

General Articles.

ROUTINE OF DISINFECTION.

By W. JOWETT, F.R.C.V.S., D.V.H.

AFTER removal of the infected animal or animals from a stable or other building it is imperative that the latter be thoroughly cleansed and disinfected before allowing other animals to gain access thereto. This cleansing and disinfecting process must be carried out in a methodical and thorough manner to be of any real service, otherwise, by giving a sense of false security, it is worse than useless.

First, the walls, windows, doors, ventilators, and fixtures must be brushed down to remove cobwebs, dust, and dirt; next, the plaster and limewash should be scraped off the walls. The material so removed, together with all litter, bedding, and food left in the mangers, should be collected in a heap and *burned* either inside the stable itself, or, if on account of the materials used in the construction of the building this appears dangerous, then just outside the stable door. Combustion of this material may be facilitated by pouring a little paraffin over it prior to applying a light.

Next, the mangers, fittings, and partitions require attention. These should be scrubbed with a solution of soap in hot water containing one or other of the disinfectants mentioned, preferably cresol (Jeyes' Fluid, Creolin-Pearson, etc.), and this may also be applied by means of long brushes or mops to the walls, particular attention being paid to that portion of the wall near—and especially to that in front of—the manger. In the case of very old and dirty mangers and fittings a hot solution of soda (washing soda or caustic soda) may be needed to remove grease and dirt.

After this preliminary cleansing we may proceed with the disinfection proper. In applying the disinfectant solution a spray pump may conveniently be used, the disinfectant being sprayed over the entire surface of the walls, floor, mangers, fittings—in fact, on to every part of the anterior of the building. Where, however, a spray pump or hose-pipe and force pump is not available, then one must apply the disinfectant solution by means of mops or brushes. Whichever mode is adopted, great care must be taken not to overlook and omit introducing the

disinfectant into all corners, angles, and crevices. Hot solutions of the disinfectant (*i.e.* solutions made with hot or boiling water) should be used in preference to cold ones.

If a poisonous disinfectant such as corrosive sublimate be used, one may eliminate all danger (*e.g.* accidental poisoning of animals from licking walls, etc.) by practising a second spraying or washing of the disinfected surfaces with clean, cold water some hours after applying the disinfectant.

Finally, all doors, windows, and ventilators should be opened to allow free access of air and light, and one may then proceed to limewash the walls and, where necessary, to paint the fittings.

The limewash should be prepared with fresh unslaked lime, and to each bucketful of the limewash a half pint or so of cresol, creolin, or of Jeyes' fluid or similar proprietary disinfectant may be added with advantage—or, if preferred, one may add 6 ounces or so of formalin to each gallon of limewash. The limewash can be applied to the walls either with brushes or by means of a spray pump.

Should the floor of the stable or building be of earth, it is advisable to dig up and remove some four or six inches or so of the surface soil, which, after removal, should be burned or mixed with quicklime, chloride of lime, or other reliable disinfectant. The earth so removed should be replaced with fresh soil from an uncontaminated source, or, better still, and whenever possible, a new floor of concrete or other non-absorbent material should be laid. If the floor is of concrete or similar impervious material, it can, of course, be cleansed or disinfected in the manner above indicated for walls, floors, mangers, and fittings.

Pails, buckets, brushes, curry-combs, and other stable utensils which have been used in connection with infected animals may be disinfected by immersion for a few hours in a solution of cresol (or of one or other of the proprietary disinfectants consisting largely of cresol, such as Jeyes' Fluid).

Blankets and *horse-rugs* may be disinfected in a similar manner, remaining in the bath for twelve hours or longer. One authority recommends that when dealing with outbreaks of disease in instances where receptacles for such baths are not

obtainable, one may make a bath of any reasonable size by digging up a portion of ground, removing the soil, and covering the bottom and sides of the depression so made with a sailcloth or wagon-cover. After testing with water to see that it is watertight, the necessary amount of disinfectant solution may be poured in. The blankets should be opened out one by one, laid in the bath, and care taken to see that there is always sufficient disinfectant present to more than cover them.

Leather work and *leather goods* should not be steamed or boiled or treated with "formalin." The best procedure in disinfecting such articles is to scrub them with soft soap and water, after which they may be immersed for some hours in a bath of cresol or "creolin."

In disinfecting harness which has been used on animals the subjects of certain parastic diseases, such as mange ("brandziekte"), particular attention must be directed to the stuffing and lining, which it is often better to remove and burn, afterwards disinfecting the leather work in the manner above indicated, and subsequently having the saddles and collars lined and stuffed afresh.

Litter, manure, and bedding used in connection with animals which have been infected with diseases, such as anthrax ("miltziekte"), glanders, tuberculosis, black-quarter ("sponzietke"), and of parasitic diseases, such as mange, should be burned in every case. This may be carried out by collecting the material in a heap, pouring paraffin over it, and applying a light. If for any reason this is impracticable, then the manure must be most *thoroughly* disinfected and buried as deeply as possible. Manure, litter, and bedding may be disinfected by mixing with them lime (quicklime) or chloride of lime, or a disinfectant such as cresol or creolin (and in the writer's opinion the two last-mentioned disinfectants are to be preferred for this purpose). In this event the mass of bedding or manure must *contain* the requisite proportion of disinfectant—it is not sufficient merely to add a quantity of, say, 2 per cent. cresol or creolin to the mass, the latter must *contain* 2 or 3 per cent. of cresol or the correct proportion of any other appropriate disinfectant which may be used.

Cattle markets, pens, sale yards, and *auction yards,* as well as *cattle trucks and boxes,* may be disinfected in a manner simi

lar to that described in the foregoing pages as for disinfection of stables and cowsheds. The Stock Disease Regulations of this country provide that such enclosures or buildings must be cleansed and disinfected "at the close of each day during which they have been used," and in the case of trucks and horse-boxes "before they are again used for carrying animals," the cleansing and disinfection of the latter being carried out as follows:—

They must be (*a*) swept and, as far as possible, scraped; (*b*) thoroughly washed and scrubbed with water; (*c*) sprayed with a disinfectant; and (*d*) finally limewashed.

The disinfectant used for this purpose should be at least equal in germicidal action to a 5 per cent. solution of pure carbolic acid (crystals). For this purpose either formalin, or an alkaline solution of cresol, would seem to be as useful and reliable as any.—*Disinfectants and Disinfection.*

WHAT IS WRONG WITH AGRICULTURE.

Rural Education and the Village Snob.

By A. T. JOHNSON.

There are only two things that really matter these days—munitions and agriculture—and they are interdependent. It is these two which are the basic source of German strength, and they are the weapons which, in the hands of the Alliance, will ultimately smash the power of the Central Empires.

In those days the necessity for our present vast output of munitions of war will wane, but the necessity for a well-organised and efficient system and practice of agriculture will remain, if, indeed, national economics will not compel us to pursue it with greater vigour than we have ever yet dreamed of.

For farming is, after all, the fundamental origin of all wealth and national prosperity. It is, furthermore, the industry which breeds and nourishes not only the great bulk of the man-power of these islands, but it is the field and furrow of the "Old Country" which are the cradle of those up-growing nations of the British Empire beyond the seas.

And for many years to come those great continents and dominions will look to us to provide them with sturdy sons and daughters so that the good work of our earlier pioneers may be carried on and the well-being and solidarity of the Empire maintained and assured.

A Pauperised Industry.

How are we treating this very foundation and buttress of our national existence? What is its position as a productive factor to-day, especially in view of the fact that nearly the whole of Europe is engaged upon a business of destruction?

One need not return to the pre-war years when agriculture was permitted to muddle along pretty much as it liked, when the farmers' appeals for protection fell upon deaf ears, when the State neglect of our primary industry was a by-word among European nations, and when, through our own shortsightedness and stupidity, millions of our sturdiest sons were driven to take refuge in the towns and other lands. One has only to consider the present price of food stuffs and to imagine where we should be—where we should have been long ago—had not our ocean-carrying food ships been less efficiently protected against the enemy, to realise the inadequate condition into which we had allowed our machinery of home supply to drift.

Whilst merchants and middlemen gambled with our overseas wheat and waxed fat on corners in bacon—even as they are doing to-day to their everlasting shame—home agriculture, the producer and elemental source of all food and real wealth, was methodically pauperised. As for the public, we were living in a fool's paradise with about a fortnight's supplies to go upon.

What we are doing with our greatest productive power is hardly more satisfying than what we have done. We are waking up drowsily to the fact that something—some land—ought to be secured for "the boys" when they come home. But whether we re-populate 6,000 acres or 60,000 with ex-service men it will be of little account to the future welfare of agriculture. Such schemes, like the smallholdings attempts in various remote parts, are a mere "drop in the ocean" compared with the enormous magnitude of the task which confronts the people of this country in the regeneration of British agriculture.

These isolated and, in a sense, private efforts are better than nothing, and indicate that a wholesome, if not very active, spirit in favour of land development is alive. But we must go further than that, and it is my belief that nothing short of an entire re-modelling of our rural education of the rising generation will be of much avail.

A Race of Snobs.

A well-known chairman of a county educational committee was roundly accused the other day of being an arbitrary and despotic Tory, an oppressor of the poor and what not, because he had the courage to state that it were wiser in the interests of the individual and the State to teach the country child to hoe turnips well rather than to play the piano badly. But he struck a note of ringing truth, for there is no escaping the fact that, instead of bringing up a healthy and prosperous peasantry we are, by our educational system, propagating a race of unhealthy and ill-mannered snobs.

"Our existing system of rural education," to quote the Education Committee of the Central and Associated Chamber of Agriculture, "tends to educate the village boys and girls away from the land rather than to fit them for a career on the land." The results of this misguided policy were manifest before the war in our deserted fields and villages, in the scarcity of farm labour, in the congested cities, and in the wholly inadequate production of home-grown food. Our criminal neglect of this first duty of State is now being brought home to us with an acuteness that is beginning to sting.

The village boys and girls of to-day have "gone beyond" the honest toil of the field. They turn up a nose of contempt at the work their fathers and mothers did. The one has become a young blood with an office stool and a boiled shirt as the end and object of his ambitious soul; the other apes the lofty realms of the flapper, unconscious of the obvious fact that she does it very badly.

Both get into mischief, or are counted among the lucky if they do not. Both of them are snobs in the meaning of the word that leaves no room for doubt. They are idle and they are unproductive. They are a source of anxiety to their parents, if the latter happen to be of the old school, and they are objects that demand such delicate, kid-glove treatment, such servile consideration at the hands of an employer that most of the latter would now rather do the work themselves, or let it go undone, than be bothered with them and their superior airs.

Even the women from the cities whose ready response to the call of agriculture for helpers might, one would have thought, have brought the blush of a conscience pricked to the cheeks of these parochial parasites, have had to suffer their gibes and empty laughs of scorn.

THE NOBLEST NATIONAL WORK.

It is no use hoping, as I have inferred, to redeem agriculture by substituting for these peasant prigs, unbalanced products of a misapplied education, a few town-sick men and women. Land settlement and other schemes will do no more than touch the fringe of an immense problem. What we have to do is to secure the youngsters of the rural village; to save them from being inoculated with that distaste for country life which has possessed their demoralised elder brothers and sisters.

And the only way in which that can be done is by remodelling our school curriculums—which need not imply any narrowing of education—by engrafting upon the children's minds that agriculture is, rather than being a humiliating calling, perhaps the greatest and noblest of all national work.

We have still a nucleus to go upon which is the most precious of all our inheritances, but it is a nucleus which, once it were lost, could not be recovered for generations, if ever. And if, concurrently with this revised training, some of those millions which are spent in chasing the rainbow end of experimental settlements were to be devoted to the better housing and greater comfort of our existing peasantry, that solid foundation of British man-power and citizenship so essential to the existence and prosperity of the whole Empire would be achieved.—*Daily Dispatch.*

Canine Clinical.

CASE OF CALCULUS IN THE KIDNEYS OF A DOG.

ON September 25th I was called to see a four-year-old retriever dog said to be suffering from difficulty in passing water. On arriving, I found the dog looking rather dull, with a temperature of 103°, slightly stiff in the hind limbs while walking, but not suffering any pain. The bowels were acting and appetite good. He passed water while I was there, without straining. As he looked lively, and his master wished very much to take him on the moors grouse-shooting that day, I consented, leaving some diuretic medicine and a small dose of physic to be given after his return during the evening.

The next day being very foggy and a cold east wind, he was not taken out. The following morning I again saw him, and all indications showed him to be improving, except the temperature had risen half a degree.

In the evening he was brought over to my home, much worse and looking very dull. He had passed neither urine nor dung during the day.

On examination I could not detect any calculus in the bladder or urethra. Apparently he was suffering no pain. The m.m. of the eye was a shiny yellow colour. Breathing normal; pulse right. From the floor of the abdomen and rising up each side for about 4 inches, was a fairly hard swelling which I could not account for.

I tried two doses of oil and some diuretic medicine, but these were vomited up in 2 or 3 minutes. I then gave a dose of cascara evacuant, which was retained, also enema, and all was done that could be done for his comfort. Next morning—found neither urine nor dung had been passed through the night. Dull, but no pain; gave him egg and milk, which was retained. In about two hours I gave ½ dram. resin mixed with hard soap to a bolus, including four purging pills. At noon I gave some beef-tea, which was vomited immediately. In the evening more egg and milk, which also was vomited immediately. At bed-time he passed a fair quantity of water and some liquid fæces.

There was still no pain; only weakness and dullness growing more pronounced.

Death took place during the night. On P.M. I found quite a quart of bloody-coloured water in the abdominal cavity. The bladder was about quarter full and the walls were thickened. Communicating with the abdomen, I found a small aperture about the size of a pin's head, through which I could make urine flow on pressing bladder. The edges of the aperture were black. I did not see any ulceration in the bladder. The kidneys were enlarged and inflamed, one containing a quantity of dirty-looking pus, and each contained a calculus—one about the size of a haricot bean and smooth, the other about the same size but flatter, and with a rough surface and which was easily broken down.

Liver dark in colour and slightly enlarged. Gall bladder full. The owner said the dog had been unwell for one day about a month ago, but the next day he was all right.

Thinking that this might be of interest because of the absence of the evidence of pain in this case, is the reason of my submitting it to you. "A Country Vet."

Translations.

A MODIFICATION IN THE TECHNIQUE OF THE CASTRATION OF MARES.

By Dr. E. GRAUB, Veterinary Surgeon to the Cavalry Remount Depôt at Bern.

THE castration of the mare is nowadays exclusively performed from the vagina. The method by incision in the flank is to-day generally discarded.

Castration of the mare is an operation in which asepsis—as far as we are able to achieve it—offers the only security for a technical good result.

The vagina of the mare is by nature not a carrier of pathogenic micro-organisms, as we shall see later on. A post-operative infection is as good as excluded if after the operation one does not concern oneself any more about the vaginal wound and its cleanliness. Each irrigation after the operation and later on is not only superfluous, but directly injurious, and carries in itself the possibility of an infection. The exit of the vagina furnishes sufficient security against a subsequent infection from without. But it must be borne in mind that one must leave this door as much as possible intact, in order to be sure of the safeguard. I think less of mechanical lesions to the vagina than of unnecessary rents in the mucous membrane of the organ inflicted during operatory preparations which have, as a result, the subsequent uneasiness of the patient with constant pressing and straining. I consider that the preparatory disinfection of the vagina can easily be carried too far. An eroded or chemically irritated mucosa subsequently becoming inflamed forms an extraordinarily favourable region for bacterial invasion, whilst the intact mucous membrane furnishes just as great a hindrance against external infection. But a preparatory disinfection carried out with consideration and moderation and the observance of asepsis are necessary for good results to accrue. So much for asepsis and antisepsis in this operation. Before operating the animal should be put on half rations, little voluminous in character. On the day before operating all food should be withheld.

Castration is best performed with the subject standing. Operation on the recumbent animal is possible, but very troublesome for the operator.

A dose of 40 to 50 grammes of chloral has in most cases a very quieting influence on the patient. If necessary, the mare's head may be fixed on both sides and a girth or sack put under the chest to hinder her lying down. To prevent kicking, the hind legs may be fastened at the fetlocks with pretty strong rope. A band over the loins and croup will prevent the hind quarters being raised too high. In case of necessity, one can stand behind a door of convenient height. Failing this, a long and strong piece of lattice work may be held by assistants and raised or lowered as required. The operator is in this way protected. If, in spite of this, the subject tries to squat down and kick, the operation is very difficult to perform. In such cases nothing remains but to be very patient and await quiescent moments. Finally one accomplishes one's object.

After the rectum has been emptied, where possible not by the operator himself, the tail is plaited, bound up and raised. The vulva and its neighbourhood are washed with soap, disinfected with sublimate and then alcohol. The hand and arm are similarly prepared. The india-rubber tube with glass funnel attached, previously disinfected in sublimate solution, is now introduced into the vagina with the hand, and commencing with the vestibule, and holding the tube always in the hand, the whole wall of the vagina is washed out and continuously irrigated with a one per cent. therapogen solution. During this procedure the bladder may as a rule be emptied by exerting slight pressure on it. This need, however, cause no anxiety. The urine of the healthy horse is sterile. With two vessels each holding about 4 litres (7 pints), disinfection of the vagina is fully accomplished. A greater quantity is unnecessary and only irritates the mucous membrane. After the fluid lying on the floor of the vagina has been allowed to escape as far as possible, the hand and tube are withdrawn. After the most careful preparation loose hairs may be attached to the forearm and round the vulva, so that after each withdrawal of the arm the vulva is washed with a weak therapogen solution. The solution is allowed to flow also over the elevated hand, elbow and forearm.

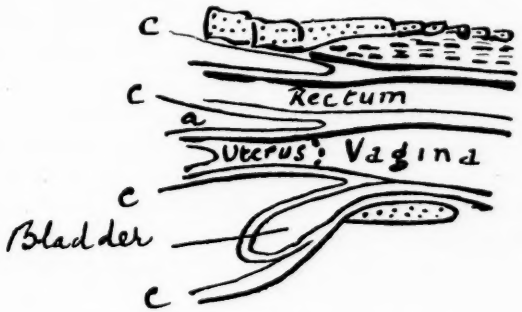
For the vaginal puncture I use a straight, covered bistouri attached to a chain. The blade must be broad and not sharper than a badly ground table-knife. The perforation of the vagina by a puncture is preferable to an incision in the vaginal mucosa. In opposition to the hitherto general practice I make my opening in the vagina below.

On the advantages and disadvantages of this procedure I will descant afterwards.

The bistouri is closed, pressed by the thumb against the other outstretched fingers and introduced into the vagina.

On the floor of the vagina one plainly feels the anterior edge of the pelvis (pecten ossis pubis). Somewhat further forwards one comes to the external orifice of the uterus. One sets the points of one's fingers under the orifice and presses slightly cranialwards, thus the floor of the vagina is stretched and is to be felt as a long tight membrane about 10 cm. in extent, reaching from the edge of the pelvis to the mouth of the womb. In this stretched mucosa the bistouri with the blade shoved forward by the thumb is thrust forwards and downwards by slight continuous pressure close behind the orifice. With the drawing back of the knife one inserts the forefinger into the puncture opening, shoves the blade back into the knife with the thumb, and allows this to be drawn back by an assistant pulling on the chain. When one has thrust the forefinger into the puncture opening on the floor one feels in its depths the empty, thick-walled bladder and loop of small intestine. The forefinger is now cautiously drawn back but only so far that the point of the finger still remains in the opening. The middle finger is now introduced alongside the index finger in the opening; by slight pressure the wound is widened till this finger is completely through. Successively, in this way one procures a wider opening until the wound is penetrated by the other fingers, and will finally admit the whole hand. Entering the abdominal cavity one turns the palm surface of the hand towards the back bone and thus feels the body of the uterus in one's hand. Tracing it forward one comes to the bifurcation of both horns. Following the right horn one unfailingly comes to the right ovary. Just the same on the left side. This locating of the ovaries offers not the slightest difficulty. The anatomical relations are so simple and

clear that for those doing the operation for the first time, a non-discovery of the ovaries or a mistake is wholly excluded. After one has thus located the position of the ovaries, the hand is drawn back and the chain écraseur introduced. Alongside the body and horn of the uterus one feels one's way to the ovary. This reached, one thrusts the horizontally-held noose up over the ovary, or otherwise one lets the ovary fall into the out-spread noose of the chain which is slightly tightened by an assistant. The palm of the hand is always turned upwards; one holds the instrument up by light pressure with the base of the hand, and thus has all five fingers free in order to push away and control threatened loops of intestine, so that actually only the ovary is included in the noose of the chain. On drawing up



SECTION THROUGH THE PELVIC CAVITY.
a—Excavatio recto-uterina.
b—Excavatio vesico-uterina.
c—Peritoneum.

the écraseur chain the mare now makes violent defensive movements. At this time, and later on, especially if the movements are very violent, the greatest care must be taken that no rents occur in the ovarial ligaments. The avoidance of this is not difficult if the operator during the whole act of snaring and removing the ovary bears the ovary and the écraseur in the flat hand and at every defensive movement supports the elbow and under arm on the floor of the pelvis and lifts the ovary and the écraseur towards the backbone with the hand. At the same time by this means the uterus is also supported, and a rent of the lig. lata hindered.

The removal of the ovaries is only slowly accomplished, and

takes about 8 to 10 minutes for each ovary. It often happens that bits of tissue are drawn through the slot of the écraseur by the chain, and the ovary does not come away by itself. In this case the ovary now firmly situated at the end of the instrument must be twisted until resistance ceases. By loosening and thrusting out the chain from the shaft of the écraseur by the assistant, everything is loosened, and the ovary comes away. Cleanse as indicated, and proceed in the same way on the other side.

The mare is freed and led into a stall. The hind-quarters are raised and the patient tied up. Dietetic measures are not indicated, but proffered hay is always taken with good appetite after the operation.

Now what are the advantages and disadvantages of making the puncture in the vagina *below*? Let us make the anatomical conditions clear. (See figure.) Above, the vagina coalesces with the rectum to its greatest extent. On its dorsal surface the peritoneum attaches itself to the body of the vagina close behind the crossing of the uterus in the vagina to pass over directly to the rectum and thus forms a table between vagina and rectum (excavatio recto-uterina). In foals and mares which have not been pregnant, this excavatio recto-uterina is not at all deep (Degive). The puncture place *above*, which according to circumstances cannot be quite determined, is only very limited; for the coalescing proportions between vagina and rectum one can never foresee. On this account the puncture above is always made in the dark. And if one does not succeed in fixing the vagina firmly in this procedure, the rectum and large vessels always lie in serious proximity.

More certain and clearer are the anatomical relations in puncture *below*. In the background lies the cervix uteri. Eight to ten cm. backwards the anterior edge of the floor of the pelvis may be felt. Left and right of this the art. and venæ iliacae, whose course may be plainly determined. Under the vagina lies the bladder, which alone, in making the puncture, is in danger of injury. That this danger is extremely small, and in carrying out the described technique hardly arises, is shown from what follows. During irrigation of the vagina and cleansing of its walls with the hand, a massaging effect is carried out on the bladder, which irritation causes it to be regularly emptied. The

bladder also at the moment of operating lies hanging in the abdominal cavity as a slack sack above the pecten ossis pubis. The peritoneum covers uterus and bladder and forms analogously the excavatio recto-uterina above and the excavatio vesico-uterina below. This table in the mare is regularly rather deep, the vagina and bladder coalesce with one another from the neighbourhood of the anterior pubic edge right away backwards. If one now stretches the under wall of the vagina, as described in the operation, thus one can introduce the covered knife close behind the external os and with a forward and downward thrust of the blade penetrate the abdominal cavity with safety, without touching any other organ with the point of the knife. It must be understood that one awaits a moment for the puncture when the abdominal muscles are not fixed and the animal is not pressing and straining. Otherwise the situation of the puncture ensures no protection.

It is advisable in the castration to make the opening in the vagina by means of a puncture with subsequent blunt widening (fingers) than by one extensive or several incisions. A vigorous puncture is perhaps better than a hesitating one. But how far a puncture goes in this delicate region, where everything is very movable, where one depends entirely on the sense of touch and where the topographical conditions are not easy to survey, is difficult to determine. For the rest there is slow continuous pressure of the knife through the vaginal wall. Should another organ come within reach of the puncture it will in all probability be pushed away without injury. For only a well-stretched body is punctured in this way; a slack, movable one is always avoided.

A vaginal speculum is superfluous. When using one the hand has to be inserted and withdrawn three or four times, and this encourages infection. The blunt widening of the puncture when made below offers no difficulties. The widening movement downwards and forwards is easier for the hand than upwards and forwards. That with this procedure the ovaries can very easily be found is quite plain.

The chief precaution, on which I lay great stress, consists in fixing and supporting the uterus and its stays in the normal position, so that in case of the most violent and startling defensive movements of the animal no tearing of the suspensory appara-

tus of the genital organ can occur. Colic and unrest after the operation continuing all day in some cases, and described by authors, are exclusively due to tears and bruising of the suspensory apparatus of the uterus and ovaries. If the procedure here indicated is carried out, not only will quiet mares do well, but animals that have been very violent and in which one might expect all sorts of complications recover uneventfully.

In the operation through the vaginal opening above, the support of the uterus from below and removal of the strain from the lig. lata is not possible since the hand and the arm lie between the rectum and uterus. On the contrary, by the introduction of the hand into the abdominal cavity the cervix uteri will be pressed down and the lig. lata stretched. In violent movements the stretching must be such that it may easily lead to tearing.

The possibility of a hernia or an incarceration as in all perforating vaginal wounds must be granted. Still, the probability of such an accident is very small. Up to now I have never seen it.

The thought may arise that in this modification of the operation, as the puncture is on the floor of the vagina all secretions will gravitate towards it and so into the abdominal cavity. In reality this danger is not of much consequence. The vagina of a healthy mare is not the site of pathogenic micro-organisms. My examinations made on twenty-four cases showed no traces of staphylococci or streptococci culture. What was grown were generally saprophytes.

Bacterial flora were far more prevalent in the vestibule than in the depths of the vagina. Only in four cases was material from the vestibule sterile, whilst in only three cases did secretion from the external oriface of the uterus contain bacteria.

It was interesting to note that on two occasions a streptothrix-like organism similar to the actinomyces thermophilus (Gilbert) was found. It grew luxuriously on agar and bouillon. The bacteriological examination supported the clinical evidence. So far I have operated on twenty-one mares without mishap or fatalities. After two weeks they were put to work.

Practical success was not as good as the surgical success. Of twenty-one castrated mares thirteen became quiet and useful animals, and were no longer a source of danger. The percentage of mares made valuable from a previous condition of uselessness is very encouraging.—*Swiss Journal of Veterinary Medicine.* G.M.

Abstract.

RESEARCHES UPON CONTAGIOUS ABORTION OF CATTLE.*

By W. L. WILLIAMS, Department of Obstetrics and of Research upon the Diseases of Breeding Cattle.

In 1910 the writer made some extended observations upon the killing floors of abattoirs regarding the prevalence and significance of the granular venereal disease, or infectious vaginitis, of cattle, some of the results of which were included in Bulletin No. 106 of the United States Department of Agriculture, published September 12, 1914. We have issued other publications from time to time relating to this affection and to abortion, which have been largely summarized in the annual report of the New York State Veterinary College at Cornell University for 1913-1914. In the present report we desire to avoid any material repetition of what has already been stated in these publications, and shall, where occasion suggests, refer to the above publications as a basis for general statements.

Abattoir Studies.

Our abattoir studies upon the granular venereal disease during the year covered by this report have not affected the question of its possible relation to abortion. The evidence remains purely clinical and circumstantial, consisting essentially of the conviction in the minds of many clinicians that, wherever the granular venereal disease is very intense, abortion, sterility, etc., are very common, and vice versa. Beyond this the evidence has not yet gone. During the year, however, our researches have added some very interesting data with relation to the granular venereal disease. It has heretofore been claimed that the disease is chiefly one of cows and heifers, but that it may invade the genital organs of the bull. One or two observers have further stated that the infection has been contracted by pregnant sows, and in these has caused abortion. Such observations have been presented as evidence of the importance of this infection in relation to abortion in cattle. Observations upon the granular venereal

* In co-operation with the Bureau of Animal Industry, United States Department of Agriculture.

disease have been very inaccurate. There has been a very marked tendency among observers to look for the granular venereal disease when a storm of abortion appears. When they do so, they find it, and at once conclude that it is the cause of abortion. At the same time they fail to make a diligent search for the infection in other animals in which abortion is not observed. If they did look for it they could find it.

During the year we have taken occasion to study this question somewhat extensively in abattoirs, upon animals coming from various sections of the country. Large numbers were examined, though not so many as in our Bulletin No. 106. We concentrated our studies in this respect chiefly upon bovine males and upon both sexes of sheep and swine. We were greatly interested to observe that the infection is just as universal in bulls as in cows and heifers and that bullocks or steers are quite as universally infected as either of the preceding. Our researches emphasize very strongly the fact that bovine animals of both sexes and those which are unsexed by castration are all alike involved, and while there are now and then individuals which do not show unmistakable lesions of the infection, it is nevertheless essentially universal from the time that the calf reaches the age of three to six months until old age.

Quite as interesting as these observations were the revelations obtained by examining the genital organs of both sexes of sheep and swine. Here again the lesions are just as marked and characteristic and well nigh as universal as in cattle. Lambs of both sexes, pigs of both sexes, and castrated as well as entire adults, all show alike the characteristic lesions of this infection. As in cattle, so in sheep and swine, there are individuals in which the lesions cannot be detected. In the very young animals of both sexes the lesions are quite generally not visible to the naked eye, but it requires only a few months until a very large percentage of the young animals of both sexes show the disease, and the frequency or universality of the disease increases constantly with the age of the animal, though after adult age has been reached the intensity tends to decrease.

The nodules, or granules, appearing in the genital organs of sheep and swine are identical in macroscopical appearance with those present in cattle. In male cattle, sheep and swine, the nodules, or granules, are seen chiefly in the sheath and prepuce

and upon the glans penis, so that the location corresponds very closely with the appearance of these lesions in the vulvar and vaginal mucosæ in the female. There is, however, this essential and interesting difference. We have failed to find any reference by anatomists or embryologists to the peculiarities of the prepuce in cattle, sheep and swine. The preputial sac does not exist in the newborn. At the time of birth the prepuce is closely adherent to the glans penis and the urethra opens into the sheath. The newborn male calf, lamb, or pig cannot therefore protrude the penis, and constantly urinates within the sheath. When puberty arrives, the adhesions between the glans penis and the prepuce become gradually broken down and the animal is enabled to protrude the penis. If the newborn male of either of these species is castrated, the development of the preputial sac is arrested, and as a consequence the animal may never be able to protrude the penis from the sheath, but urinates constantly within that passage. If the animal is not castrated until puberty has arrived or is near, the preputial sac becomes established in varying degrees, so that upon the killing floor one can find every gradation in the formation of the preputial sac. As a result of this peculiarity in the embryology of the males of these species, we have a different group of pathologic conditions prevailing. We have a more delicate membrane covering the glans penis and lining the prepuce than in some other animals, and these subject the animal to greater danger from various infections. The inability of the male which has been castrated early to protrude the penis, causing him to urinate constantly within the sheath, tends also to bring about certain types of disease, as the acute infection of the sheath in bullocks, which we do not observe in bulls nor in entire male animals of other species.

The fact that the granular venereal disease is far more universal and involves more species of animals than we have heretofore supposed does not affect the question of its importance in relation to the infection of cattle abortion and the group of phenomena associated therewith. The frequency or rarity of a disease does not fix its danger to the life or efficiency of the affected animal. There are rare infections which are very serious and there are common infections which are of little consequence, and vice versa.

Each of the two infections, the bacillus abortus of Bang and the granular venereal disease, if they are distinct infections, is so universally distributed and involves so nearly all cattle that it is impossible at present to show clearly what influence the one infection may or does exert upon the animal body in the absence of the other.

Another fundamental difficulty with successful research regarding cattle abortion is that we have no clear and reliable method for determining that an animal is free from the infection. Any animal selected for experimentation with either of these infections needs be accepted with the important reservation that it may already be infected.

Until these difficulties are overcome, researches regarding abortion need be pursued in conformity with such evidence as now exists. At present the evidence is so strong that abortion in cattle is due to the *Bacillus abortus* that most investigators regard it as proven.

Studies Upon the Small Group of Cattle in Immediate Charge of this Department.

Perhaps the most interesting development in the experimental herd in our department is the influence of the preparation of the milk upon the health of the newborn calf and the tendency of its blood to react to the agglutination and complement-fixation tests.

It is aimed to bathe the cows thoroughly a few days prior to parturition, to watch them constantly day and night and catch the calf upon an antiseptic sheet as it emerges from the vulva of the mother. The calf is then washed antiseptically and dried, placed in an isolated stall, and fed upon milk cooked in a water bath for about thirty minutes. Calves so grown show a marked contrast to those reared in the ordinary manner upon raw milk. In calves reared upon raw milk there appear in almost every one, from the thirtieth to the hundredth day, traces of the granular venereal disease in the vulvæ of the heifers and in the sheaths of the bulls. There appear also upon the tuft of hairs at the inferior commissure of the vulva and upon the preputial tuft of the male a black stain and black crusts of muco-pus. This staining of the tuft of hairs about the external genital openings has generally been attributed to urinary sediment or to soiling by feces or dirty bedding with which the parts come in contact in

the stable. Our researches show very definitely, however, that this view is incorrect, and that the staining and matting of hairs and their becoming crusted over with muco-pus are due to a pathological discharge from the genital sheath. So far as we are able to observe, we must admit that in raw milk there is an element of infection which produces definite clinical symptoms in the calf which is fed upon it.

Taken in conjunction with the work of Schroeder and Cotton, who have shown that the Bang abortion bacillus exists in the milk of so large a proportion of cows, that it casts a cloud of doubt upon the milk of all cows, our researches in the feeding of calves become of very great interest. We do not know just what infection causes the discharge of muco-pus from the genital sheath of a calf fed upon raw milk. It seems highly probable that the muco-purulent discharge is caused by the organism which causes the granular venereal disease. What that organism is, we do not know.

An interesting observation is that in calves fed upon raw milk and which show the staining and matting of the sexual hairs the blood of a very large proportion thereof reacts to the complement-fixation and agglutination tests for the infection of contagious abortion. In the calves of our own herd which we have fed upon boiled milk and in which the sexual hairs have not become stained or matted, we have as yet failed to get a definite reaction by the serological tests for the infection by the Bang organism. These observations are in general, but not constant, harmony with observations upon calves fed on boiled milk in other herds than our own. Some of these calves grown upon boiled milk have now been studied for nearly two years. One has been bred to a bull which had been grown upon raw milk and had a soiled preputial tuft, has conceived, the pregnancy has run a natural course, and yet there has been no definite and clear reaction to the serological test and no definite symptom of the presence of the infection of contagious abortion, in spite of the fact that she has habitually consorted with aborters.

The number of animals which have been available in this work is too small to afford a secure basis for general conclusions except in a few particulars.

1. The researches of Schroeder and Cotton and others render it clear that a large proportion of newborn calves are exposed

to the infection of contagious abortion through taking into the digestive tract with raw milk the bacillus abortus.

2. The granular venereal disease appears in the genital sheaths of calves at thirty to fifty days, when fed upon raw milk, and the sexual hairs concurrently become stained brown or black and matted together with muco-pus.

3. The blood of these calves largely reacts to the serologic tests from the twentieth to the sixtieth day, receding for a time when the calf is placed largely upon herbaceous food.

4. Calves grown exclusively upon boiled milk generally retain clean sexual hairs, do not develop the granular venereal disease markedly, and their blood fails to respond to the serologic tests for contagious abortion.

5. So far as our very brief researches go, the negative phase of abortion appears to persist indefinitely in calves grown upon boiled milk under ordinary, natural exposure to the infection.

The only logical explanation for these differences, as we view the problem, is that the raw milk of cows contains an infection which is taken up from the alimentary tract, is carried through the blood stream to the genital tract of both male and female, and brings about certain lesions there which have not yet been carefully studied.

In prior publications we have held that the *Bacillus abortus* does not reach the cavity of the pregnant uterus (utero-chorionic space) through the blood stream, but invades that cavity through the vagina and the cervical canal of the uterus. The belief was also expressed that the bacillus recognized frequently in the fetus and its membranes entered through the chorion from the utero-chorionic space, invading in their order the fetal fluids (allantoic and amniotic), the fetal digestive tract, and finally the fetal blood.

While this view still appears to us correct, in so far as the pregnant animal is concerned, it seems quite clear that some as yet unidentified pathogenic organism, ingested with the milk of the mother, is borne from the alimentary tract, by the blood stream, directly to the genitalia, acquires a habitat in the genital tube, and contemporaneously therewith the blood of the calf tends to react to the serologic tests for abortion infection.

Many interesting data have reached us relating to the influence of the bull in transmitting a disastrously virulent strain of the abortion infection. Thus in one case three breeders assem-

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bled eight virgin heifers and sent them to a highly prized bull for first breeding. None of them conceived. They were then returned to their respective owners and were bred to the respective herd sires of known fertility. After several months none of the eight had conceived. In another instance the owners of a fashionable herd bought three highly bred young bulls which had not been used, as outcrosses for valuable virgin heifers. Two heifers bred to one of the bulls conceived, and all others failed. The herd bulls of known fertility were then used, but eight heifers had to be discarded on account of persistent sterility. The data are incomplete. We are dependent for data of such character upon breeders of pedigreed cattle. When one follows his inquiries in such cases a short distance, the breeder becomes mute. In other cases it is related to us that in herds with two or more bulls, all, or nearly all, the cows served by one bull had aborted, calved prematurely or had retained afterbirth. But definite data which could be carefully analyzed were wanting.

On the whole, it would seem, from our observations, that considering as identical sterility, abortion, and metritis with retained afterbirth, until we have much clearer and more voluminous data upon the subject, we should consider the bull as an important element in the distribution of the disease.

Clinical Observations in Pedigreed Breeding Herds.

Our clinical observations during the year have proven of very great research value. They have been essentially confined to pure bred, registered cattle in large herds and of high value. The work has been carried out chiefly in consultation with local veterinarians and directed primarily to the alleviation of sterility, which has been handled essentially as an integral part of contagious abortion. This work has afforded unusual opportunities for the clinical examination of the genital organs, along with a complete clinical history of the patient. When incurable, the genital organs have generally been procured at time of slaughter and added to our already very extensive collection.

The curable cases fall largely into three great groups:—

(a) Intra-uterine infection, chronic endometritis, acute endometritis, pyometra, hydrometra, etc., in which, so far as we have been able to determine, the infection of contagious abortion

plays the chief initial role, complicated later by a complex infection.

(b) Intra-uterine infection insufficient to prevent conception, but leading to the early death and expulsion of the embryo or fetus, indicated by apparent conception followed in two to four months by return of estrum, the embryonic abortion usually escaping observation.

(c) Diseases of the ovaries, especially systic degeneration of the corpora lutea, associated frequently with nymphomania and almost always with chronic endometritis, the uterus becoming much enlarged, atonic and flaccid. We have not been able to dissociate these from contagious abortion.

By dislodging the diseased corpora lutea from the ovaries and disinfecting repeatedly the uterine cavity, and especially the cervical canal, the work has been quite generally followed by satisfactory results. Cows long sterile or suffering repeatedly from early abortions conceive in a large proportion of cases. When such animals finally conceive without surgical interference, the pregnancy is usually insecure, and frequently ends in abortion. When conception follows through uterine disinfection, the pregnancy is usually secure, there is rarely abortion, premature birth, or retained afterbirth. This has led to an extension of the therapeutics in some herds to the disinfection of the uterus as a rule of practice following abortion, premature birth and metritis with or without retained afterbirth. Involving a large number of animals, the work has afforded many data of value, and has, in a general way, substantiated views already expressed that the chief safeguard, the only available one, against this group of disasters is to see that conception occurs in a clean uterine cavity, and to rest content then that pregnancy and parturition will be normal and the calf will be vigorous, regardless of any and every form of exposure to the contagion to which the pregnant animal may be naturally subjected.

Summary.

No disease of animals has been more unfortunately misnamed. One of the most complex infections in domestic animals, it has received a name emphasizing one symptom, and that one not the most important. Its presence, extent and importance are measured by abortion, as if that were a greater calamity than incur-

able sterility or death from retained afterbirth. Writers upon human pathology state that the venereal diseases constitute an important cause of abortion in woman, but the prevalence or importance of the venereal diseases in a community is not gauged by the number of abortions they cause, and no effort is made to control the diseases by isolating the aborting woman and disregarding all other individuals infected.

With equal persistence this disease has been handled as one involving the cow only, and even then restricted to the period of pregnancy and a few weeks following its termination. Evidence contradicts emphatically this view. Young calves, male and female alike, may frequently, if not generally, become severely infected, and there is evidence that the infection persists. At times it appears dormant, but its continued existence cannot well be doubted, not to say proven. Herd A has always had abortion, and it is just as rampant to-day as it has been in thirty years. The animals do not recover. Some are habitually resistant. One animal had a clean breeding record, and had been followed by the serologic tests for three years without a trace of reaction. She has not "recovered," so far as can be determined, but just resisted the infection all about her.

We have asserted repeatedly that because of this persistence of the infection we cannot hope, in the present state of our knowledge, for successful vaccination or immunization. If the disease itself induces no material immunity, if it is indefinitely persistent, our present plans for inducing immunity need be amended before we succeed.

Owing primarily to the misnaming of the disease, its handling has been enormously hindered or made fruitless by the general idea that the existence of the disease is restricted to a few herds, and that many herds are free from it. A careful study of the evidence presented should tend to cause some to believe otherwise. A breeder or dairyman waits till the disease is "introduced" into his herd before he is willing to take any definite measures to control his losses, and when a storm breaks he is in a great panic and demands an immediate, cheap and sure cure for a condition he has been creating for years. He is astonished to find that all "cures" fail in a storm. His pregnant females may abort, or they may not. He may give them

anything or nothing, he will know how many are to abort when the last pregnancy has terminated.

We believe it now sufficiently demonstrated that the disease is primarily and chiefly spread through the raw milk fed to young calves, and in a less measure and with less clearness that the bull is a highly important factor in the spread of the infection. Still more important, according to our observations, is the copulatory act, whether the bull is infected or not. It is a law of all animal life that intense activity of an organ or system accelerates any infection or disease therein, and this is no more true of any system of organs than those of reproduction. Our observations in our little experiment herd go far to show that ordinary exposure to the infection in stable, paddock or field is of scant consequence, and that we must concentrate our attention upon the milk fed to the newborn and upon copulation.

The milk is contaminated in two ways. Schroeder and Cotton and others have established the existence of the bacillus in the milk within the udder. A greater source of supply, perhaps the original source of infection within the udder, is the discharges from the uterus oozing down along the tail, thighs and udder, so that the calf cannot suck without taking into its mouth in abundant measure any infection emanating from the vulva. The importance of this is strongly supported by the data, where the calves ingested the bacteria existing in the milk, but were protected in large measure against the bacteria on the surface of the udder by increased cleanliness. The infection of the newborn calf is generally rendered all the more certain by the use of mixed milk after the first few days.

Technically, the one safe way to avoid the infection is to procure a sound calf and rear it in isolation on sterile milk. But far from all newborn calves are sound, and many of them will not withstand boiled milk during the first few days. Some of these will die on any food. Others apparently will live on raw, but not on sterilized, milk. The infection in these may be minimized by restricting them for a few days to the cleanest milk available.

The increase of abortion is generally deplored. Yet dairymen and breeders feed milk indifferently from any cow to all calves, or, worse yet, take milk from a diseased cow, which would justly be excluded from a market, and feed it raw to the calves, or, not having a sufficiently virulent abortion in their own herds,

they go to a creamery or cheese factory and buy raw skimmed milk or whey saturated with the most virulent infection, feed it to their calves, and then wonder why, when they are grown, they abort in their first pregnancy. Why should they not abort?

RECOMMENDATIONS.

While our knowledge of contagious abortion is meagre and fragmentary, we feel that the evidence now at hand is sufficient to warrant definite recommendations for its control. Further study must amplify these and render them more applicable and of greater efficiency, but we now possess sufficient data to outline definite measures:—

(a) Bathe the pregnant cow thoroughly a few days prior to calving, place her in a clean, disinfected box stall, douche the vagina and disinfect the tail, thighs and udder daily until she calves.

(b) Remove the newborn calf immediately at birth to a clean, isolated stall. If to be placed on its dam, disinfect her vagina, tail, thighs and udder each time before permitting the calf to suck. If to be fed (which we prefer), handle the cow in the same manner, have the milker disinfect his hands, discard the first few streams of milk, and draw the milk in a freshly sterilized vessel.

(As soon as the problem can be worked out more satisfactorily, we would advise boiling the milk from the first.)

(c) When the calf is five to ten days old, it may be placed upon boiled milk.

(d) When three to six months old, sound calves may be placed in small groups for economic handling.

(e) When of breeding age, breed preferably to a bull grown under preceding conditions. Douche the vagina of heifer and sheath of bull before breeding and repeat douche to bull immediately after breeding.

(f) When cows abort or, calving, have metritis, with or without retained afterbirth, control the disease and disinfect the uterine cavity as promptly as possible, and, this accomplished, breed.

(g) When sterility occurs, examine the internal genital organs *per vaginam et rectum* and apply such measures as the findings indicate.

The last two recommendations are technical and fall exclusively within the province of the trained veterinarian.—*Report of New York State Veterinary College.*

XUM

Correspondence.

PARACENTESIS ABDOMINIS.

To the Editor of THE VETERINARY JOURNAL.

IF I am quite in order in doing so, can you give me space in your next issue for a few remarks on the paper on the above subject by Mr. Bond, in your September number?

In the beginning (as is written in the good old book) Mr. Bond tells us the operation is not so common as it ought to be. That may be correct down South, but here it is entirely inaccurate, and practitioners in this part think as little of it as they do of giving a dose of physic, but do not go to sleep over the matter, and I cannot imagine anything so careless as to allow an animal to knock about the box for hours with a canula in position, as I have seen several cases where the bowel was torn by the patient throwing himself down during the operation, and the fixing of a string round the abdomen is about the limit, as every movement of the animal would alter the strain on one or both ends of the string and cause the inserted portion of the canula to rock all over the place, and surely the danger of this is evident to all.

Further does Mr. Bond conclude that it is good practice to leave the canula in position when the gas has ceased to escape. Is it not more than likely that the atmosphere of the place might enter the bowel, and possibly do some harm, as here, at least, stable air does not consist largely of ozone?

We puncture on either side, and just as often as necessary, an abscess may follow a dirty instrument, but we prefer not to allow this to grow as large as a cocoanut—and get ripe—we prefer opening it very much earlier with, I think, better results to the patient first, and all others concerned. My chief reason, however, for troubling you is to ask Mr. Bond if he will kindly explain how he concludes that the two mares which he did not treat would have made an uneventful recovery if he had been there earlier to tap them. Let me say at once that I hold no brief for the farrier with the forty years' experience, but in common honesty to him I expect Mr. Bond to tell us shortly how puncturing the bowel in either of those cases, would undo a twist. Up till now I have always thought a twist on any part of the bowel was fatal, and in quite a long experience have never seen

an animal with a twist recover. Have seen hundreds die from twist that had been punctured repeatedly, and as many die from the same cause which had never been punctured, as from the beginning of their illness till the end there never was the slightest need for the operation, and in the majority of cases of twist here, at least, the twist is present from the first, often even before any signs of abdominal pain are evident.

And in conclusion may I ask what this colic drink, as it is called, is meant for. Surely Mr. Bond will not even suggest that any young practitioner for whose benefit he is writing will be empirical enough at this date to give two such mixtures to any animal, and calmly think that two will suffice. The majority of up-to-date practitioners ignore the colic drink idea. They look at their patient and try to learn the cause of the combination of symptoms vulgarly called colic, and with the symptoms and history of the case do their little best to find a cause and treat accordingly, and the statement that two will suffice looks very much like what one sees on the cure-alls sold at so much per dozen by the eloquent vendor of quack medicines at our various cattle shows. Is Mr. Bond treating the disease or a symptom? What effect would his colic drink have on a case of impaction of the stomach or bowels, and would it not be more likely to be prejudicial than otherwise. Like Mr. Bond, I have the interest of the younger men at heart, and hope to have the pleasure of a very interesting explanatory reply in your next.

Glasgow. OLD PRACTITIONER.

MELBOURNE UNIVERSITY APPLICATION.

To the Editor of THE VETERINARY JOURNAL.

YOUR editorial upon the Melbourne University Application in the September number of the JOURNAL was particularly interesting to me. While the editorial as a whole deals with an essentially British problem that does not concern a foreigner, one paragraph referring to American qualifications can with propriety be discussed by one "without the realm."

You say it is "an anomaly that a British graduate going to act as a veterinary surgeon in America has to sit before an American board before he is given a licence to practise." Why is it an anomaly that a British graduate should be required to take the same examination that an American graduate does? We do

not admit that British training, excellent as it may be, puts the M.R.C.V.S. in a "holier than thou" class, and above the restrictions that experience has demonstrated as necessary to protect the public and practitioners in America. With a few exceptions all States in the American Union have veterinary examining boards, and all graduates, native or foreign, must pass their examinations before they are licensed to practise. There is no discrimination, and it seems to me that this plan is fair and just. Our former simple faith that all was wisdom and goodness that came across the Atlantic with a college degree has received several severe jolts.

I have visited all of the American veterinary schools but one, and also a number of the leading European schools. In equipment most of the American schools compare favourably with the continental schools, and, I believe, are better equipped than are the British schools.

I am not claiming that our standard of knowledge is higher, as hinted in your editorial. The thorough training in the continental veterinary schools, particularly along scientific lines, is unquestioned, but in the practical application of veterinary science and art, at least to American conditions, we yield the palm to no one.

At present there are some American veterinary schools that require an equivalent of one year in an American academic course, or a certificate of graduation from a registered gymnasium in Germany, Austria and Russia, or a Bachelor's degree from France and Spain for entrance to the four years' veterinary course. All veterinary schools recognized by the American Veterinary Medical Association require one year of high school for entrance to the veterinary college, and all now require a four years' course.

Science and learning are not confined to any land or any race. Each country naturally develops its education more in certain lines that experience has proven most useful to it. Let us not boast of our superior learning, but let us give everyone a "square deal," no matter what his race or school, and if in the great game of "making good" he can beat us, we shall not begrudge him the prize.

Nelson S. Mayo, M.S., D.V.S.

Chicago, Ill., U.S.A.